ANNUAL REPORT 1965

BURLINGTON

(Drury Lane)

water pollution control plant

DIVISION OF PLANT OPERATIONS

Ontario Water Resources Commission

ONTARIO WATER RESOURCES COMMISSION

OFFICE OF THE GENERAL MANAGER

Members of the Burlington Drury Lane Local Advisory Committee,
Town of Burlington.

Gentlemen:

I am pleased to provide you with the 1965 Annual Report for the Burlington Drury Lane Water Pollution Control Plant, OWRC Project No. 60-S-51.

We appreciate the co-operation you have extended to our Operations staff throughout the year, and trust that continuation of this close association will ensure even greater progress in the sphere of water pollution control.

Yours very truly,

D. S. Caverly,
General Manager.

ONTARIO WATER RESOURCES COMMISSION
801 BAY STREET
TORONTO 5

J. A. VANCE, LL.D.
CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MacDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am pleased to provide you with the 1965 Annual Report on the operation of the Burlington Drury Lane Water Pollution Control Plant, OWRC Project No. 60-S-51.

The report presents design data, outlines operating problems encountered during the year and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

This report provides useful information on the operating efficiency of this project during 1965. It is intended to act as a guide in gauging plant performance. To implement that aim, it includes detailed statistical and cost data, a description of the project and a summary of its operation during the year.

Of particular interest will be the cost data, which show the total cost to the municipality and the areas of major expenditure.

The Regional Operations Engineer is primarily responsible for the preparation of the report, and has compiled and arranged the material. He will be pleased to answer any questions regarding it. Other groups, however, were involved in the production, and these include the statistics section, the Drafting Section of the Division of Sanitary Engineering and the Division of Finance.

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

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BURLINGTON
Drury Lane
water pollution control plant

operated for

THE TOWN OF BURLINGTON

by the

ONTARIO WATER RESOURCES COMMISSION

CHAIRMAN: Dr. James A. Vance

VICE-CHAIRMAN: J. H. H. Root, M.P.P.

COMMISSIONERS

W. D. Conklin, Q.C. — H. E. Brown
D. A. Moodie — L. E. Venchiarutti

GENERAL MANAGER: D. S. Caverly

ASSISTANT GENERAL MANAGERS

L. E. Owers — K. H. Sharpe
F. A. Voege — A. K. Watt

COMMISSION SECRETARY

W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director: C. W. Perry
Regional Supervisor: D. A. McTavish
Operations Engineer: B. W. Hansler

801 Bay Street Toronto 5

'65 REVIEW

Burlington Drury Lane Water Pollution Control Plant treated a total of 606.717 million gallons of sewage during the year at a total operating cost of $37,586.43. The operating cost per million gallons and the cost per pound of BOD removed were $61.95 and $0.03 respectively.

Under supervision by head office engineers the plant staff has operated a clean, attractive and efficient plant for the Town of Burlington.

The average daily flow during the year was 1.66 million gallons. The plant design flow of 2.5 million gallons was exceeded 6 percent of the time. The abandoned forcemain from pumping station number nine connected to the East End Trunk Sanitary sewer and the plant intake works is used as an automatic by-pass to the Skyway plant when the flow exceeds approximately three million gallons per day.

The average raw sewage BOD and suspended solids concentrations were 223 ppm and 300 ppm respectively. The average effluent BOD and suspended solids concentrations were 9 ppm and 12 ppm respectively. The average BOD and suspended solids reduction efficiencies were 95 percent and 96 percent respectively.

GLOSSARY

BOD	biochemical oxygen demand (a measure of organic content)
cfm	cubic feet per minute
comminution	shredding of solids into small fragments
DWF	dry weather flow
effluent	outflow
flocculation	bringing very small particles together to form a larger mass (the floc) before settling
fps	feet per second
gpcd	gallons per capita per day
gpm	gallons per minute
grit	sand, dust, stones, cinders and other heavy inorganic material
influent	inflow
lin. ft.	lineal feet
mgd	million gallons per day
mlss	mixed liquor suspended solids
ppm	parts per million
ss	suspended solids
TDH	total dynamic head (usually refers to pressure on a pump when it is in operation)

HISTORY
1958 - 1965

In November 1958, the Town of Burlington and the Ontario Water Resources Commission initiated plans for the expansion of the Drury Lane Sewage Treatment Plant.

APPROVAL

In late 1959 the Town signed an agreement with the OWRC to finance, construct and operate the plant.

CONSTRUCTION

The Frid Construction Company Limited began the expansion in October 1960 and by June 23rd, 1961 the Division of Plant Operations took over operation of the plant.

TOTAL COST

The total cost of the project was $634,312.00

C. FIDDY
SUPERINTENDENT

Project Staff

Senior Operator: G. Stinson

Operator: J. Blazek

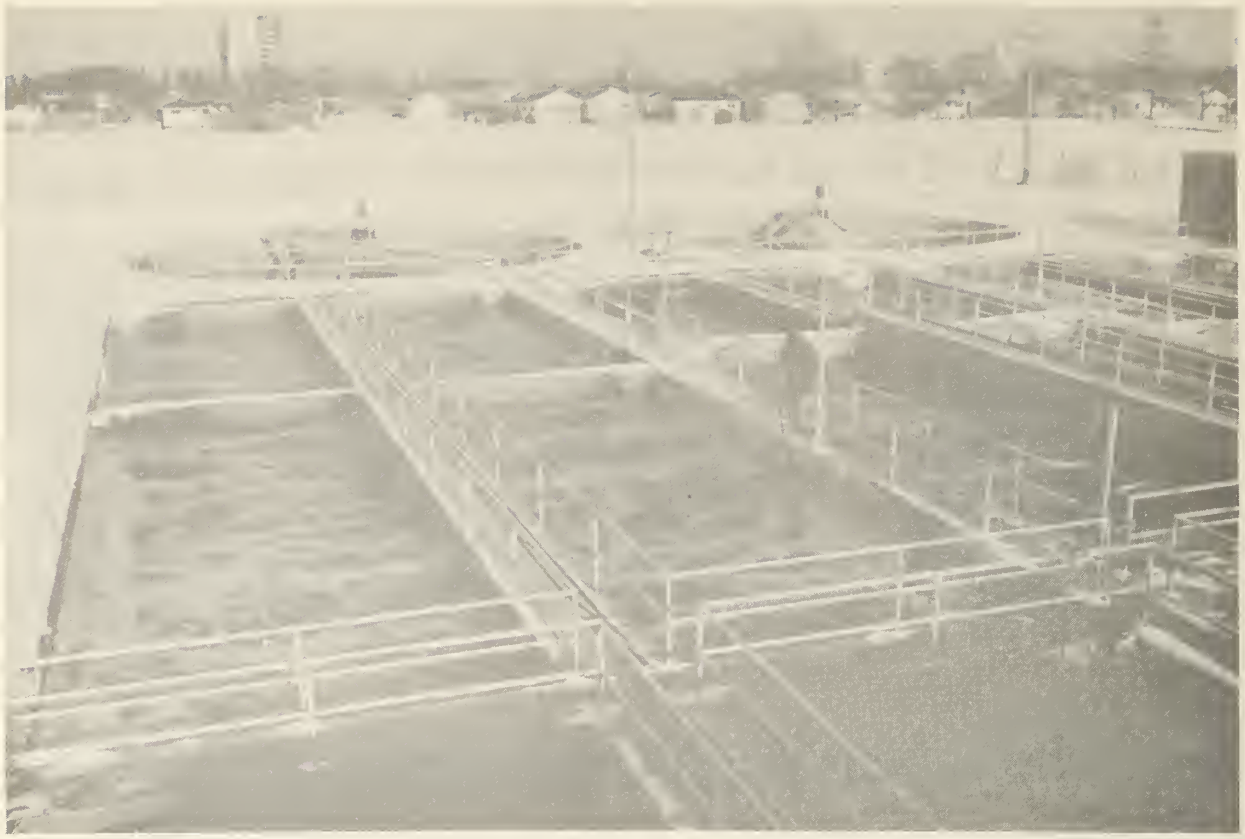
COMMENTS

The plant was normally supervised eight hours per day with the exception of the weekend, when only four hours supervision per day was supplied.

With the resignation of L. Hordyk, Senior Operator at the Elizabeth Gardens plant, on May 7, 1965, F. Carmichael was promoted from an operator at the Drury Lane plant to the vacant Senior Operator's position. It was considered that the Drury Lane plant could operate efficiently with a Senior Operator and one operator with added help when required, supplied by the maintenance technician and operators from the Skyway plant, as well as occasional aid from casual labour. The plant was then reduced fundamentally from a three-man plant to a two-man plant. This arrangement has been found to be quite satisfactory.

The operator was transferred to the Skyway plant during the year. It is planned to return the operator to the Drury Lane plant during 1966. The transfers to the other two Burlington plants is on a scheduled basis. Under this arrangement, the operator can develop and maintain familiarity with the three Burlington Water Pollution Control plants. The rotating schedule has proven to be very successful.

J. Stinson resigned on August 13, 1965 and was replaced by Mr. J. Blazek.



Description of Project

INFLUENT WORKS

Sewage is pumped to the plant and enters the grit channels through one inch bar screens. The velocity of flow through the channels is maintained at approximately one foot per second by means of proportional weirs at the outlet end. Three channels are provided, one of which is a recent addition, and the capacity is such that any two will accept a flow of 5.0 MGD. The grit and screenings are removed manually to a concrete drain pad and then trucked away.

PRIMARY SEDIMENTATION

From the grit channels the sewage flows by gravity to an influent channel from which it is proportioned between two primary tanks. Normally, the flow to each will be equal but stop logs are provided so that either tank may be isolated.

The primary tanks are both of the rectangular type, each 49.3 feet in length, 18.0 feet wide and have an average depth of 12.25 feet. The total capacity is 21,750 cubic feet (135,700 gallons) giving a retention period of 1.3 hours at design flow. Sludge is moved to hoppers continuously by flight collectors incorporating scum removal blades. From the hoppers, the collected sludge is pumped automatically to the digesters on a time cycle. The primary tank effluent is discharged over end weirs. The primary tanks are part of the old plant, no additions having been made during the recent expansion with the exception of additional adjustable weirs.

AERATION SECTION

The primary effluent flows to the aeration tanks through a channel equipped with stop gates to control the flow propor-

tioning. Normally, each of the two aeration tanks get equal flow, but either one may be removed from service.

Each aeration tank is 320 feet long, 18 feet wide and 11 feet deep. The capacity of the combined aeration tanks is 788,000 gallons giving a retention period of 6.05 hours at design flow.

AIR SUPPLY

A total of 264 Schumacher blandal tubes - fine bubble, double diffuser type - marketed by General Filtration and Engineering Limited, are located in the first three passes of the aeration tanks. Each unit is 2 feet by 4 1/4 inches diameter mounted in the wide band pattern. The fourth and final passes of the aeration tanks contain a total of 82 coarse bubble diffusers (Diffusair Sparjers) manufactured by Walker Process Limited, mounted on 2 foot centres.

FINAL SEDIMENTATION

The two circular final tanks were built as part of the expansion program. Each is 50 feet in diameter with a 10.6 foot water depth. The total capacity of the final tanks is 260,000 gallons giving a retention period of 2.5 hours at design flow.

BLOWER MOTORS

Sludge in the final tanks is continuously removed by "Rex Unitube Tow-Bro" mechanisms which depend on hydro-static pressure on a rotating header pipe to effect removal. Each revolution of the unit cleans the entire tank bottom, without having to move the sludge to a central hopper. The sludge may be returned to the aeration tank as seed for the process or to the primary tanks for removal to the digesters. Pumping of the return sludge is done by one of two units, each having a capacity of 0.65 MGD against a total head of 28 feet at full speed. The speed and, therefore, the rate of return is variable.

The final effluent flow is metered and chlorination facilities are provided. The effluent is also used in the flushing water system and the spray system for foam control in the aeration tanks. The chlorinated effluent is discharged to a gravity sewer leading to Lake Ontario.

SLUDGE DIGESTION

Two stage digestion is provided for the solids before eventual disposal by tank truck to nearby farms.

There are two primary digesters with a total capacity of 50,000 cubic feet and one secondary digester with a capacity of 25,000 cubic feet.

Prior to the expansion of the plant, the two digesters now used as primaries were used as one primary and one secondary. A new secondary digester was built and the two existing tanks were converted to primary digestion.

All three tanks are heated by two dual fuel P. F. T. Heat Exchangers, each with a capacity of 250,000 b.t.u. per hour. The temperature of the sludge is thermostatically controlled. Pumps are provided for recirculation of the sludge and may be used for transfer of the sludge from one tank to another. Sludge removal or transfer is accomplished by a manually operated positive displacement pump.

PROJECT COSTS

NET CAPITAL COST (Final)	$676,033.78
DEDUCT - Payments from Municipalities	41,721.91
Long Term Debt to OWRC	$634,311.87
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1965	$119,183.73
Net Operating	$ 37,586.43
Debt Retirement	23,013.00
Reserve	4,036.74
Interest Charged	35,589.32
TOTAL	$100,225.49

RESERVE ACCOUNT

Balance at January 1, 1965	$ 19,143.47
Deposited by Municipality	4,036.74
Interest Earned	1,126.37
	$ 24,306.58
Less Expenditures	(716.09)
Balance at December 31, 1965	$ 23,590.49

MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER
JAN	2730.45	1419.69			549.37	224.03	33.59		80.32	423.45	
FEB	2711.10	1472.06			535.47	224.03	6.50			473.04	
MARCH	3843.58	1651.11			504.77	567.03	65.44		173.68	857.36	24.19
APRIL	2790.86	1590.92			554.94	224.03	41.96		13.35	365.66	
MAY	4025.96	2225.13			541.74	224.03	67.64	73.80	110.81	757.39	25.42
JUNE	2971.71	1163.58	108.00		473.39	448.06	60.44	168.00	186.50	363.74	
JULY	3985.96	1172.55	199.20		454.64	266.47	69.42	237.43	42.86	1506.26	37.13
AUG	3119.50	1191.67	320.00		467.26	448.06	83.27	20.19	1.50	587.55	
SEPT	2204.99	760.10	128.00		466.79	224.03	77.59	2.96	66.05	455.28	24.19
OCT	2796.10	1346.75			543.94	448.06	59.15	14.57	70.50	313.13	
NOV	2392.35	1126.71			530.73	224.03	11.97		22.65	447.66	28.60
DEC	4013.87	843.28		140.31	563.74	664.41	311.33	80.83	395.18	988.15	26.64
TOTAL	37586.43	15963.55	755.20	140.31	6186.78	4186.27	888.30	597.78	1163.40	7538.67	166.17

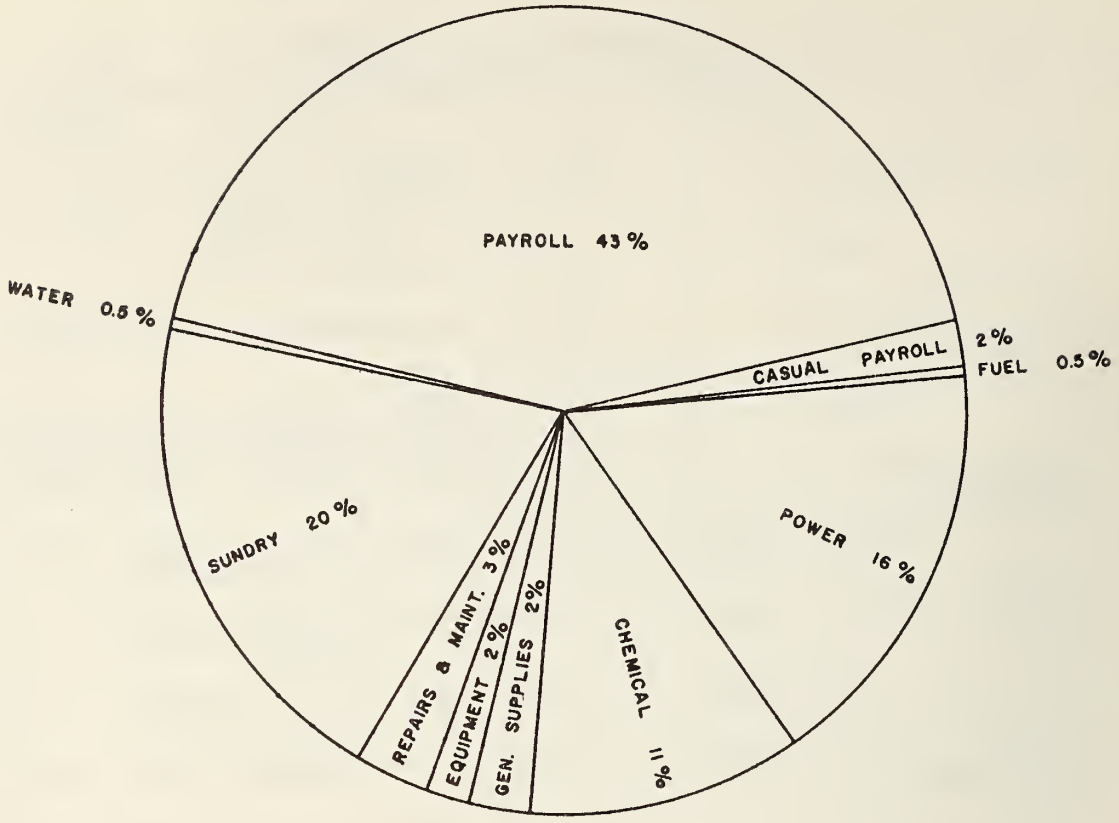
* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE $5,574.93
BRACKETS INDICATE CREDIT

YEARLY OPERATING COSTS

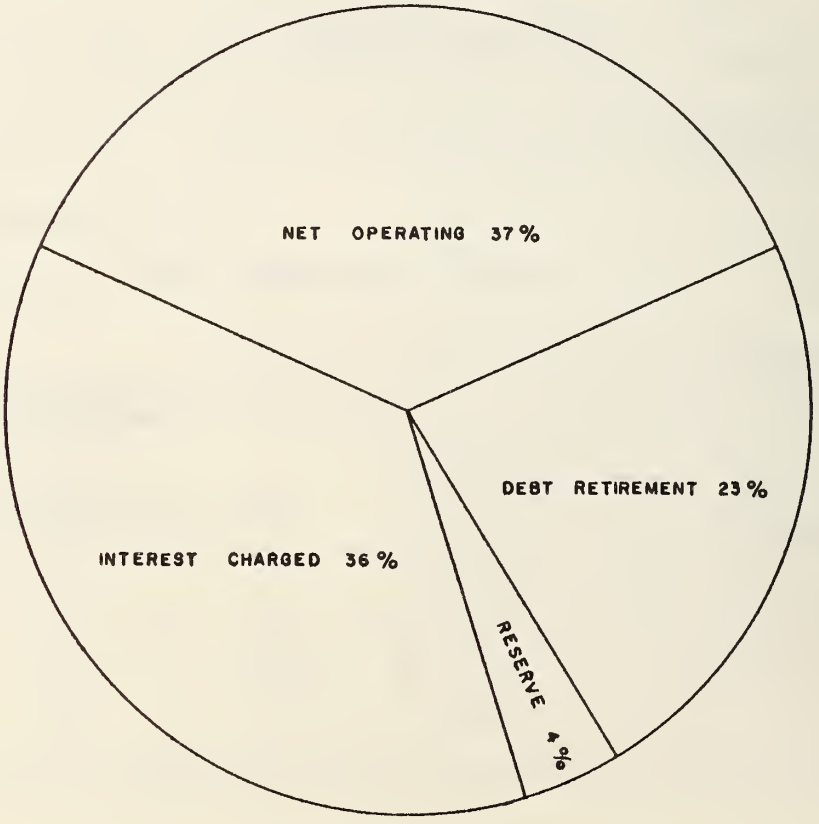
YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER MILLION GALLONS	COST PER L.B. OF BOD REMOVED
1961	734.00	$ 38,823.00	* -	$ 52.20	-
1962	891.90	41,983.00	-	47.00	3 CENTS
1963	842.28	43,454.00	-	51.60	3 CENTS
1964	823.80	45,026.00	7.78	54.65	2 CENTS
1965	606.72	37,586.43	7.92	61.95	3 CENTS

* BASED ON TOTAL POPULATION, 3.9 PERSONS PER FAMILY AND THE TOTAL OPERATING COSTS OF ALL OWRC BURLINGTON PROJECTS

1965 OPERATING COSTS

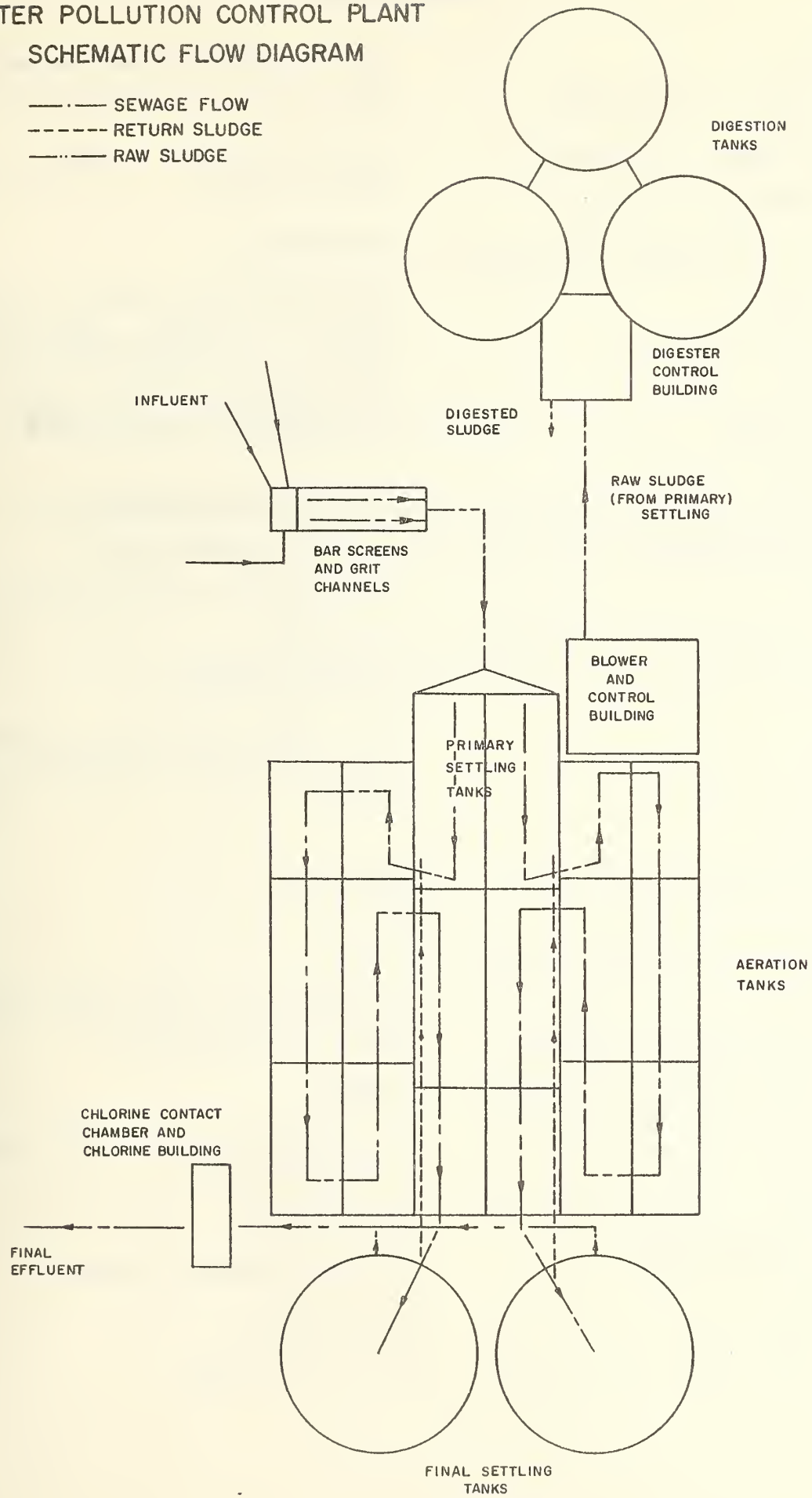


TOTAL ANNUAL COST



Technical Section

BURLINGTON DRURY LANE
WATER POLLUTION CONTROL PLANT
SCHEMATIC FLOW DIAGRAM



Design-Data

GENERAL

Type of Plant - Activated Sludge

Design Population - 30,000 persons

Design Plant Flow - 2.5 MGD

Daily Per Capita Flow - 83.4 gallons

Five Day BOD -

Raw Sewage - 200 ppm
Removal - 90%

Suspended Solids

Raw Sewage - 180 ppm
Removal - 90%

PRIMARY TREATMENT

Inlet Pipes

Three forcemains with diameters of 12", 14" and 16".

Screening

One inch bar screens.

Grit Removal

Three grit removal channels with volumes of 74 cubic feet each.

Detention Time - 0.8 minutes at design flow of 2.5 MGD.

PRIMARY SEDIMENTATION TANKS

Two Rectangular primary clarifiers, 49.3 feet long, 18.0 feet wide and 12.25 feet deep.

Detention Time - 1.3 hours at design flow of 2.5 MGD.

SECONDARY TREATMENT

Aeration Tanks

Two, triple pass tanks. Four sections are 118' long and the other two are 85.5' long. All six sections are 18' wide and 10.7' deep.

Detention Time - 7.43 hours at design flow of 2.5 mgd.

AIR SUPPLY

264, Schumacher fine bubble, double diffuser type brandel tubes, 2 ft. x 4 1/4 in. diameter. 82, coarse bubble type diffusers (Diffusair Sparjers). Two blowers, each delivering 750 cu. ft. per minute. One blower, delivering 1500 cu. ft. per minute.

FINAL SEDIMENTATION

Two 50 ft. diameter units.

Detention Time - 2.5 hours at design flow of 2.5 MGD.

SLUDGE REMOVAL

"Rex Unitube Tow-Bro" mechanisms which depend upon the hydrostatic pressure on a rotating header pipe to effect removal.

DIGESTERS

Primary

Two heated 40 ft. diameter units with a capacity of 1.67 cu. ft. per capita. Total volume is 50,200 cubic feet.

Secondary

One 40 ft. diameter unit. Total volume is 23,000 cubic feet.

Heat Exchanger

Two Pacific tank heat exchangers.

CHLORINATION

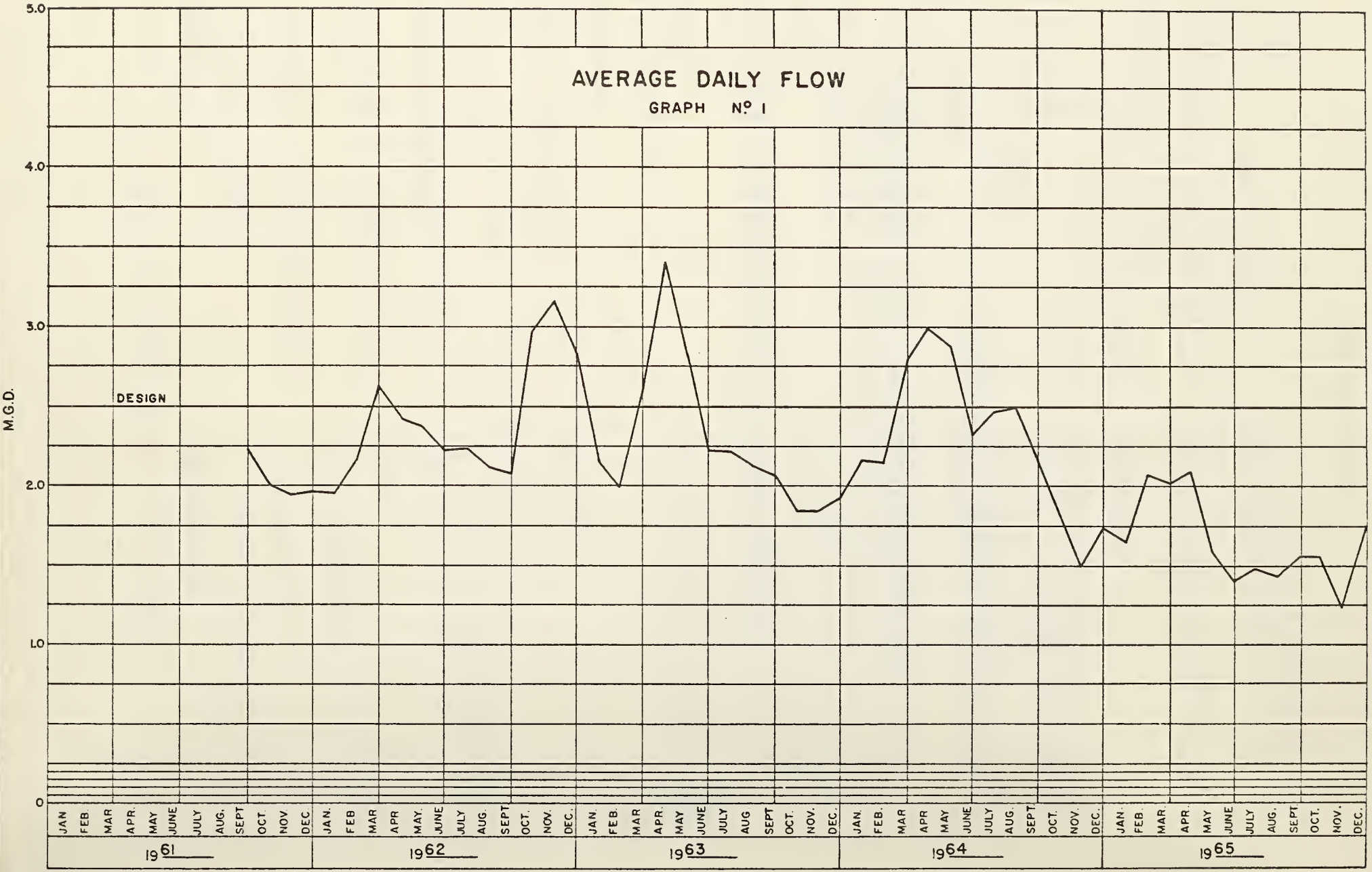
One Kent Chlorinator.

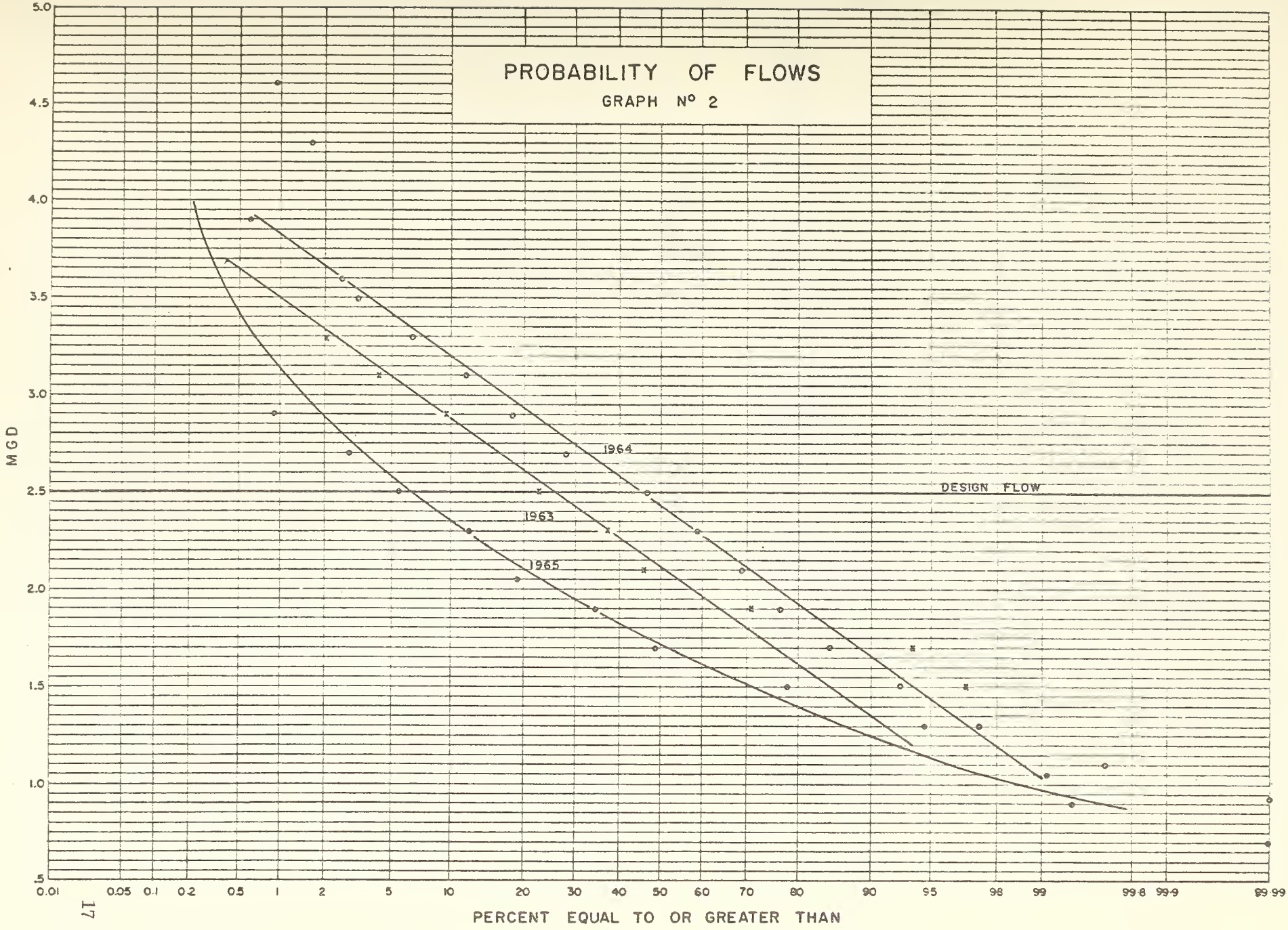
Process Data

Average daily flows are plotted on a probability basis and on an average per month basis on the accompanying graphs.

The average daily flow during the year was 1. 66 million gallons. The maximum and minimum average daily flows averaged per month occurred in April and November and were 2. 10 million gallons and 1. 24 million gallons respectively. The plant design flow of 2. 5 million gallons was exceeded 6 percent of the time.

The decrease in flow which occurred in 1965 can be attributed to the fact that some of the flow which previously would have reached the plant was diverted to the Skyway plant during the year.


AVERAGE DAILY FLOW
GRAPH Nº 1
M.G.D.
5.0
4.0
3.0
2.0
1.0
0
DESIGN
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV. DEC.
1961
1962
1963
1964
1965


PROBABILITY OF FLOWS
GRAPH Nº 2
MGD
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
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1964
1963
1965
DESIGN FLOW
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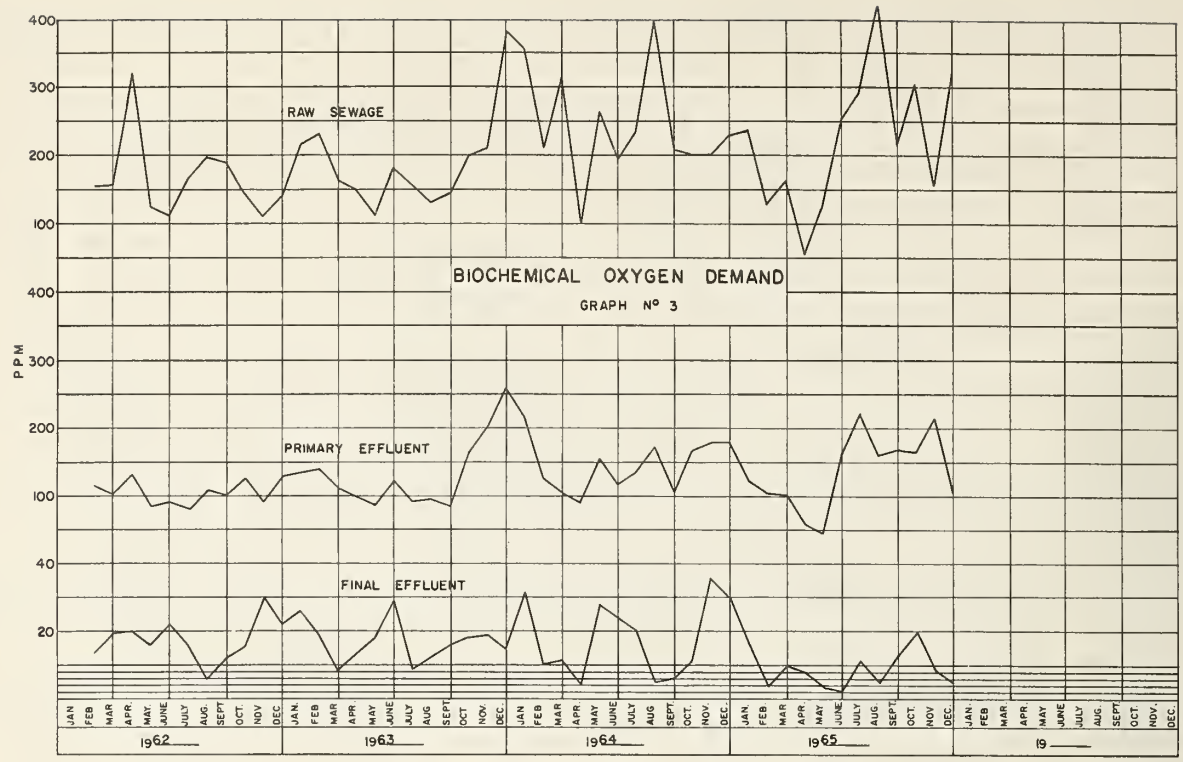
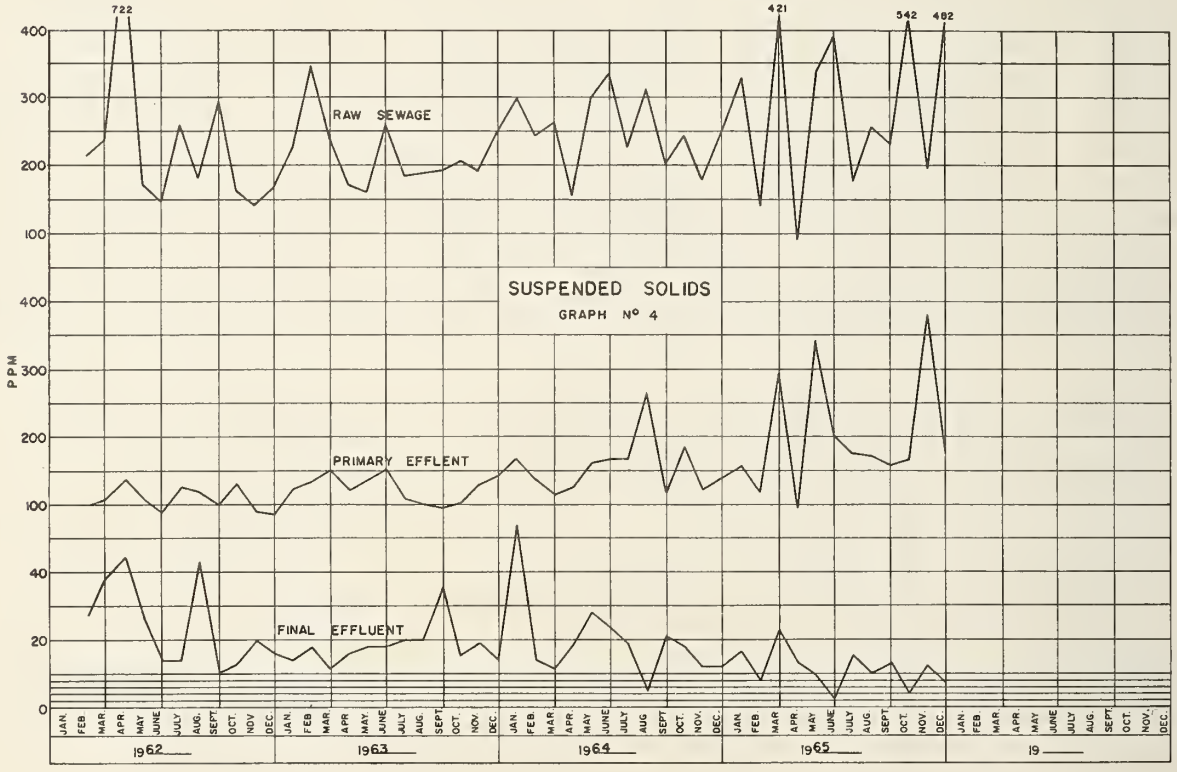
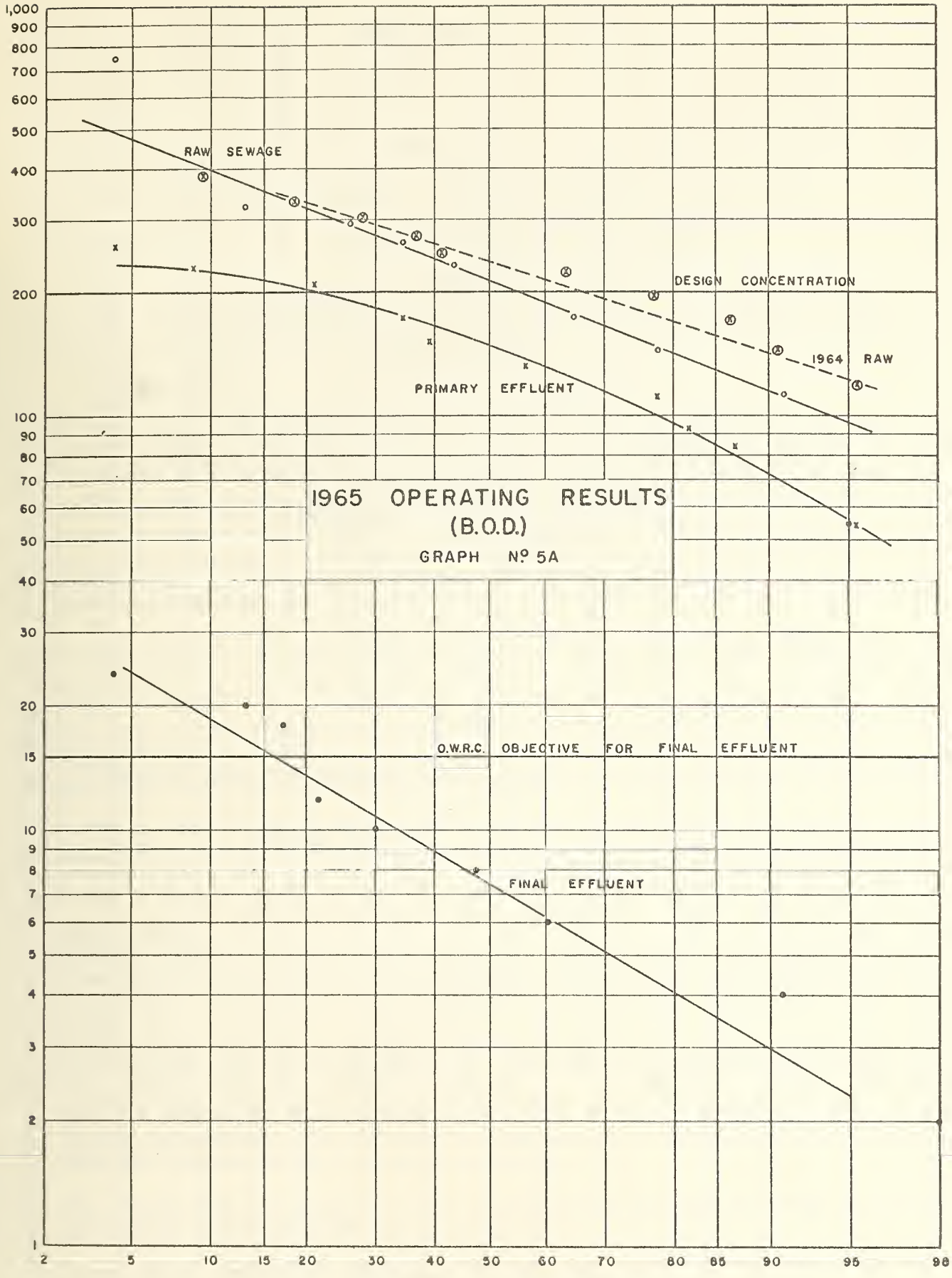
99.9
99.99
PERCENT EQUAL TO OR GREATER THAN



MONTHLY VARIATIONS

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RAW SEWAGE
DESIGN CONCENTRATION
1964 RAW
PRIMARY EFFLUENT
1965 OPERATING RESULTS
(B.O.D.)
GRAPH Nº 5A
O.W.R.C. OBJECTIVE FOR FINAL EFFLUENT
FINAL EFFLUENT
2
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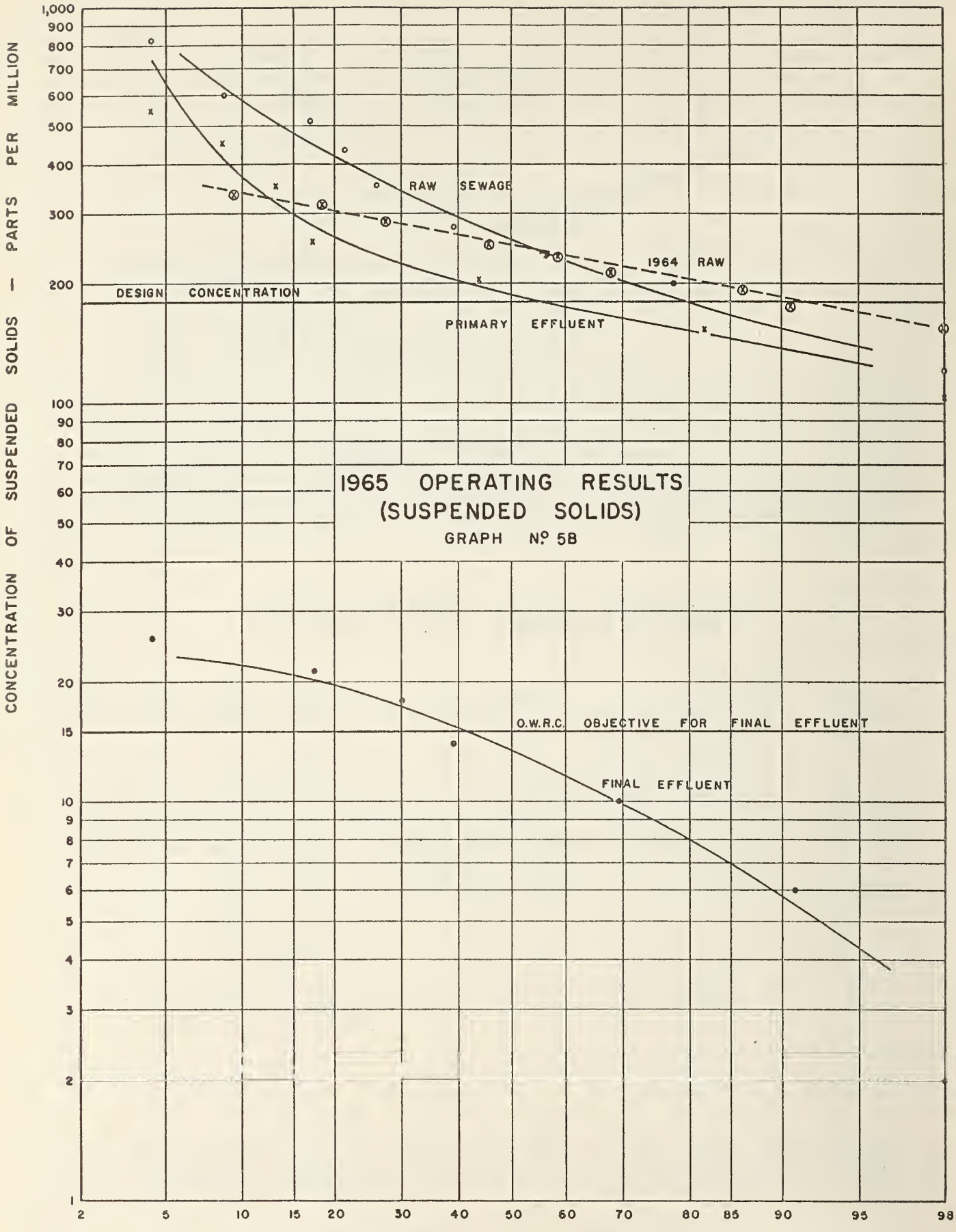
% EQUAL TO OR GREATER THAN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2
1
CONCENTRATION OF SUSPENDED SOLIDS — PARTS PER MILLION
RAW SEWAGE
1964 RAW
DESIGN CONCENTRATION
PRIMARY EFFLUENT
1965 OPERATING RESULTS
(SUSPENDED SOLIDS)
GRAPH Nº 5B
O.W.R.C. OBJECTIVE FOR FINAL EFFLUENT
FINAL EFFLUENT
2
5
10
15
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30
40
50
60
70
80
85
90
95
98
% EQUAL TO OR GREATER THAN

GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	
JAN.	238	16	93.0	56.8	328	17	95.0	79.6	5
FEB.	129	4	97.0	36.5	144	8	94.5	39.7	15.5
MAR.	161	10	93.5	47.9	421	23	94.5	126.3	-
APR.	55	8	85.5	14.9	91	14	85.5	24.4	27
MAY	125	3	97.5	30.1	338	10	97.0	80.9	-
JUNE	255	6	97.5	53.0	394	6	98.5	82.6	22.5
JULY	292	11	96.0	65.1	177	16	91.0	37.3	26
AUG.	422	5	99.0	92.3	253	10	96.0	54.4	35
SEPT.	215	13	94.0	47.2	232	13	94.5	51.2	30
OCT.	305	20	93.5	68.8	542	4	99.0	129.9	41
NOV.	158	8	95.0	27.9	198	12	94.0	34.6	28
DEC.	318	5	98.5	85.7	482	7	98.5	130.1	12.5
TOTAL	-	-	-	649.2	-	-	-	873.7	242.5
AVG.	223	9	96.0	54.1	300	12	96.0	72.8	20.2

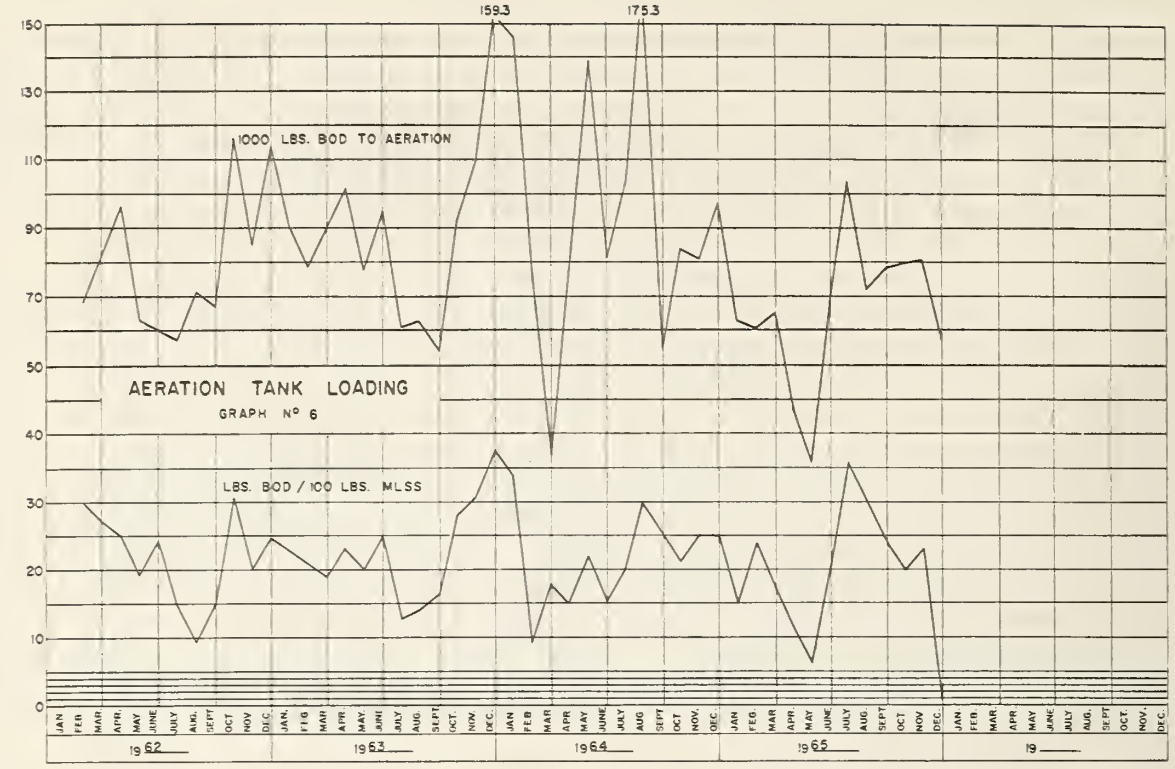
COMMENTS

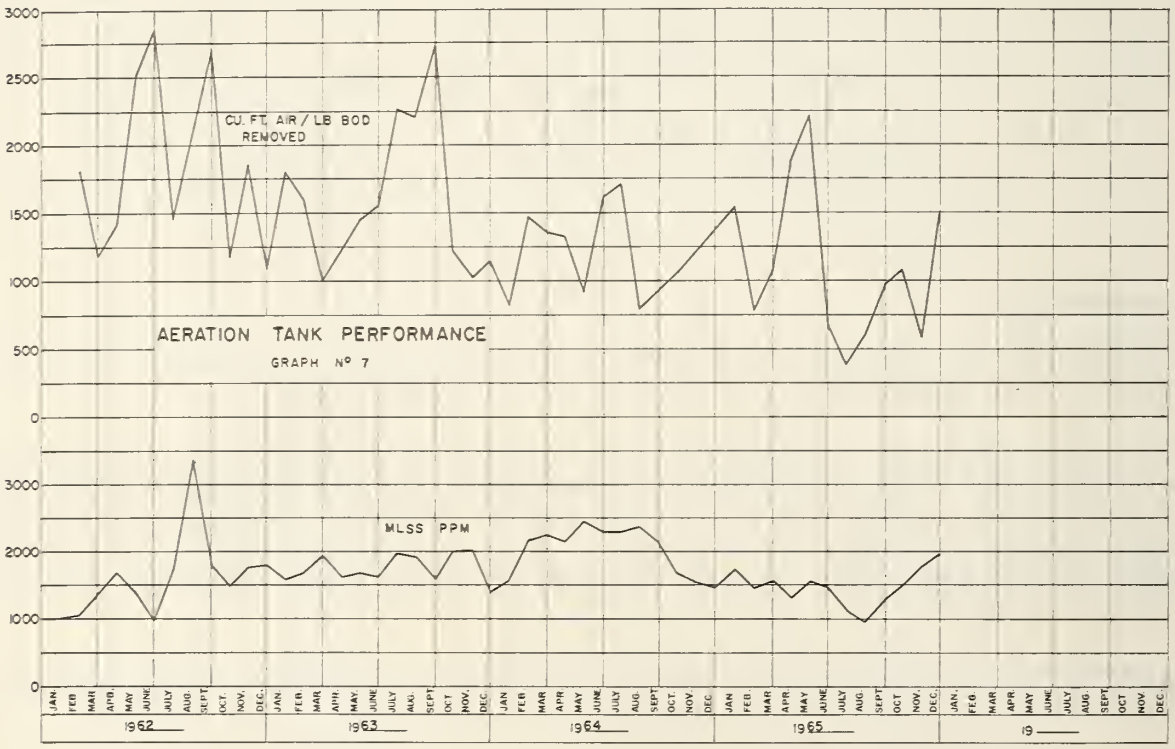
Average BOD and suspended solids concentrations plotted on a probability basis and on an average per month basis are included on accompanying graphs.

The average raw sewage BOD and suspended solids concentrations were 223 ppm and 300 ppm respectively. The design BOD and suspended solids concentration were exceeded 50 percent and 80 percent of the time respectively. Excellent treatment was afforded by the plant reducing the BOD and suspended solids to average concentrations of 9 ppm and 12 ppm respectively. The average BOD and suspended solids reductions efficiencies were 95.0 percent and 96.0 percent respectively.

The effluent BOD and suspended solids concentrations exceeded the OWRC objectives 16 percent and 42 percent of the time respectively.

During the year a total of approximately 243 cubic feet of grit were removed.


159.3
175.3
150
130
110
90
70
50
40
30
20
10
0
1000 LBS. BOD TO AERATION
AERATION TANK LOADING
GRAPH Nº 6
LBS. BOD / 100 LBS. MLSS
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT NOV DEC.
1962
1963
1964
1965
19


3000
2500
2000
1500
1000
500
0
CU. FT. AIR / LB BOD REMOVED
AERATION TANK PERFORMANCE
GRAPH Nº 7
MLSS PPM
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT OCT. NOV. DEC.
1962
1963
1964
1965
19

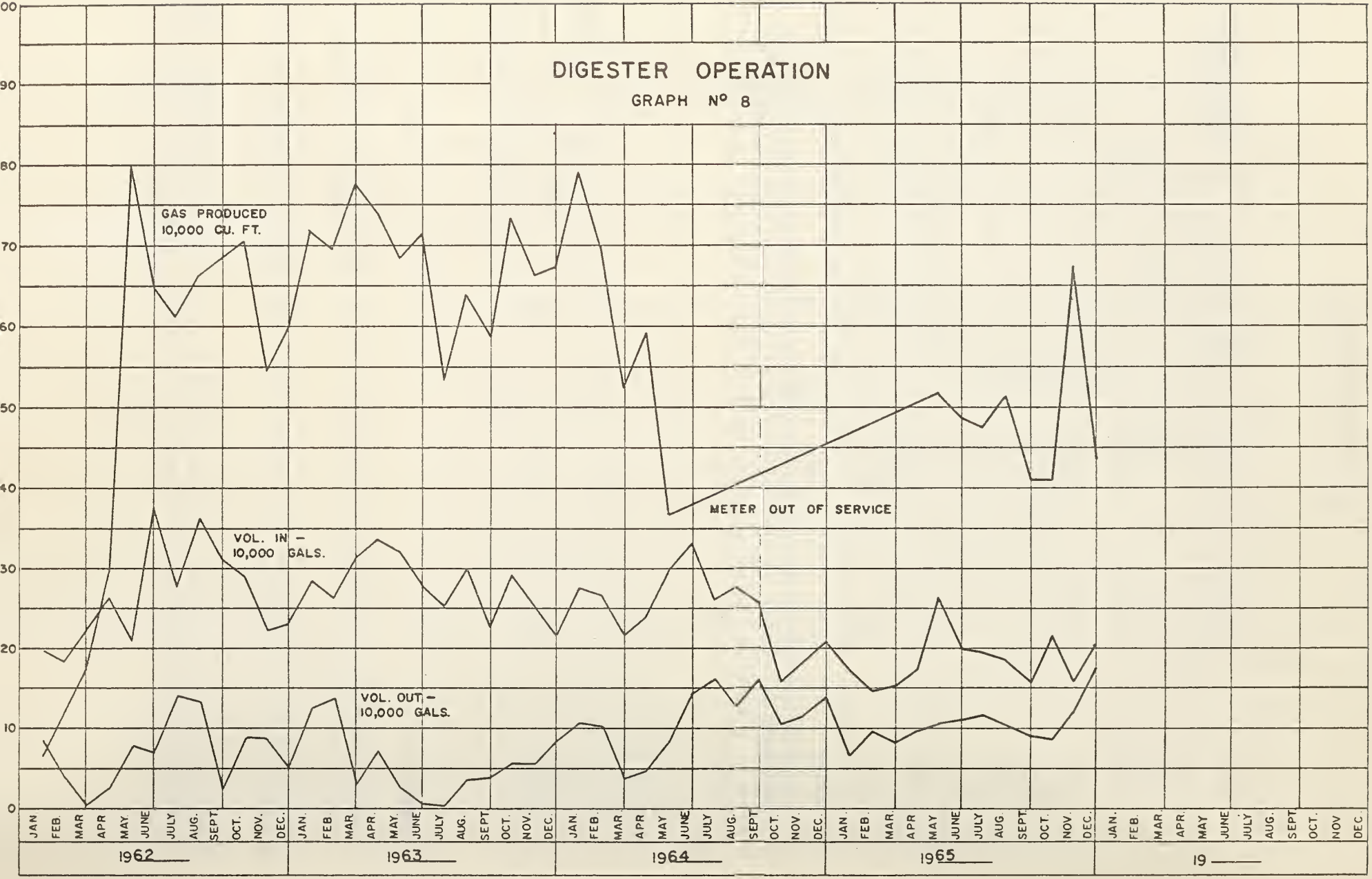
MONTH	PRIM. EFFL B.O.D. P.P.M.	M.L.S.S. P.P.M.	LBS. BOD. PER 100 LBS. M. L. S. S.	CUBIC FEET AIR PER LB. B.O.D. REMOVED
JANUARY	123	1708	15	1543
FEBRUARY	104	1451	24	781
MARCH	102	1568	17	1095
APRIL	58	1306	11	1897
MAY	44	1550	6	2229
JUNE	160	1457	20	651
JULY	222	1166	36	433
AUGUST	161	996	30	598
SEPTEMBER	168	1299	24	957
OCTOBER	165	1490	20	1188
NOVEMBER	215	1747	23	630
DECEMBER	105	1950	11	1478
TOTAL	-	-	-	-
AVERAGE	136	1474	20	1123

COMMENTS

Average aeration section parameters averaged on a per month basis are plotted on the accompanying graphs.

The average pound of BOD per 100 pounds of MLSS of 20 is within acceptable limits for good aeration section operation.

The average cubic feet of air supplied per pound of BOD removed was slightly higher than the normal accepted figure of 1000. Coarse type air diffusers in the latter part of the aeration section are mainly responsible for the slightly higher than average oxygen consumption.


DIGESTER OPERATION
GRAPH Nº 8
GAS PRODUCED
10,000 CU. FT.
METER OUT OF SERVICE
VOL. IN —
10,000 GALS.
VOL. OUT —
10,000 GALS.
100
90
80
70
60
50
40
30
20
10
0
JAN. FEB. MAR APR MAY JUNE JULY AUG. SEPT OCT. NOV. DEC.
1962
1963
1964
1965
19

DIGESTER OPERATION

MONTH	SLUDGE TO DIGESTERS			SLUDGE FROM DIGESTERS			GAS PRODUCED 1000'S Cu. Ft.
	1000'S CU FT.	% SOLIDS	% VOL. MAT.	1000'S CU. FT.	% SOLIDS	% VOL. MAT	
JAN	27.64	4.78	2.95	11.04	4.08	2.06	-
FEB.	23.55	5.58	3.56	15.81	4.90	1.93	-
MAR.	24.43	4.97	2.80	13.53	5.88	2.37	-
APR.	27.80	5.27	3.53	15.91	7.30	3.55	*60.10
MAY	42.02	5.30	3.46	17.16	7.70	3.70	512.76
JUNE	32.07	4.30	2.86	17.70	7.45	2.99	489.93
JULY	31.52	4.78	2.96	18.94	6.28	2.70	473.02
AUG.	29.61	4.19	2.77	17.39	5.88	2.92	511.75
SEPT.	25.07	4.60	3.22	14.59	5.69	2.71	404.18
OCT.	34.54	3.20	2.20	14.28	5.10	2.42	410.29
NOV.	25.59	4.25	2.70	19.56	3.97	1.96	676.45
DEC.	32.86	4.60	2.81	28.56	4.32	2.04	426.47
TOTAL	356.70	-	-	204.47	-	-	3964.95
AVG.	29.73	4.65	2.98	17.04	5.71	2.61	495.62

*Five days data only. Meter repaired.

COMMENTS

Volumes of sludge pumped to and from the digester and gas produced are plotted on a monthly basis on the accompanying graph.

The volume of sludge pumped to the digesters is misleading when computing the volume reduction of sludge pumped to and from the digesters. Past experience has indicated that without returning a high volume of supernatant to the primary clarifiers, it is not possible to obtain a high solids content in either the primary sludge or in the digested sludge. Therefore, due to sludge recirculation, the volume of sludge pumped to the digesters is higher than normally expected.

The average percent reduction in volatile matter during the year was 52.7 percent indicating that the digesters operated efficiently.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	51.213	2236	4.37
FEBRUARY	58.345	1703	2.92
MARCH	63.436	2269	3.58
APRIL	63.274	2195	3.47
MAY	49.307	1995	4.05
JUNE	42.599	1850	4.34
JULY	46.349	2038	4.40
AUGUST	44.747	1996	4.46
SEPTEMBER	46.756	1909	4.08
OCTOBER	48.280	1837	3.80
NOVEMBER	37.265	2120	5.69
DECEMBER	54.786	1800	3.28
TOTAL	606.717	23948	-
AVERAGE	50.560	1996	3.95

COMMENTS

An average chlorine dosage rate of 3.95 ppm was necessary to maintain a residual of not less than 0.5 ppm.

CONCLUSIONS

The average BOD and suspended solids removals were 95.0 percent and 96.0 percent respectively which indicates that the plant afforded excellent efficiency in treating the sewage.

Throughout the year the plant staff operated a clean, attractive and efficient plant for the Town of Burlington.


ONTARIO WATER RESOURCES COMMISSION